How to use Adobe Acrobat

 Print page

 Save PDF file to disk

 Zoom in (ctrl key changes the tool to zoom out)

 Slide the drawing (Pan)

 Zoom 100%

 Fit page width in screen

 Fit entire page in screen

 Search for a word or number

2002 Volunteer Salmon Watcher Program

Lake Washington Watershed and Vashon Island

July 2003

Jennifer Vanderhoof, King County Water and Land Resources Division

King County Water and Land Resources Division, in cooperation with:
Lake Washington/Cedar/Sammamish Watershed Forum
Central Puget Sound Watershed Forum
King Conservation District
Snohomish County Surface Water Management
Bellevue Stream Team
Cities of Bothell, Issaquah, Kirkland, Redmond, Renton, Seattle, and Woodinville

Summary

In 1996, the Bellevue Stream Team, King County Water and Land Resources Division, the Muckleshoot Indian Tribe, the Snohomish County Surface Water Management Division, and the Washington Department of Fish and Wildlife began a jointly coordinated volunteer spawning survey program in the Lake Washington Watershed (all waters draining through the Ballard Locks). In 1997, the program evolved into the Salmon Watcher Program as it is today and has been conducted annually since. The purpose of the program is to document the distribution of spawning adult salmon throughout the basin via an active public outreach and education program, and subsequently consolidate all the information into a single resource (this report). These data can be used by policy makers and the public to improve how aquatic resources are managed, to protect salmon and trout species, and to enhance their habitat.

For the 2002 program, 151 volunteers surveyed 175 sites on 66 streams throughout the Lake Washington Watershed and Vashon Island streams from late August 2002 to February 2003. Because volunteers collect the data in this program, the agencies are able to obtain information from far more locations than would otherwise be possible. However, data in this report should be used with the following factors in mind:

(1) Volunteer expertise in locating and identifying fish species varied from very high to very low;
(2) Coverage of streams by volunteers was by no means complete; therefore, fish distribution information is not complete;
(3) Volunteers view stream sites for relatively brief periods of time during the spawning season;
(4) Determination of survey sites was based on volunteer availability and site accessibility (and some survey locations change from year to year, even on the same creek);
(5) Spawning fish can be difficult to see and therefore may have passed through reaches undetected; and
(6) Volunteer data indicate only where minimum fish distributions extend to, but do not indicate reaches where fish are definitively absent (in other words, the data confirms fish presence, but does not confirm absence).

Volunteers observed the following species: sockeye, chinook, coho, kokanee, and chum salmon, as well as trout species (rainbow or cutthroat). Steelhead trout were also reported but not verified. The following results were compiled from volunteer observations: (1) coho had the widest distribution throughout the official survey area (23 streams); (2) sockeye were seen in the greatest numbers by far (over 28,000 enumerated); (3) chinook were observed in 6 Lake Washington basins; and (4) kokanee observations were verified in five Lake Washington basins.

Maps included in this report have been published on the Internet, and can be found using the hyperlinks on this web page: http://dnr.metrokc.gov/wlr/waterres/salmon/maps.htm *(To return to this document, click the Back Button in your browser)*

Acknowledgements

Many thanks to all the dedicated volunteers for spending many hours in cold and wet weather to collect the information for this report—sometimes for the sixth year in a row, and sometimes without ever seeing a single fish. Without the volunteers there would be no data, no maps, no report. They help make a positive difference here in the Northwest, not only by reporting fish species, but by acting as the eyes and ears of the streams, reporting stream blockages as well as illegal and other suspect activities. You are true stewards of the resources that make the Pacific Northwest so special. A *huge* Thank You!

We also want to acknowledge the various individuals from the cooperating jurisdictions. Every year these folks meet and plan the program, organize and stage the training sessions, and invest lots of time attending to the questions of the volunteers. Thanks (in no particular order) to Roger Kelley, Laura Reed, Bob Spencer, Debra Crawford, Scott Gonsar, Peter Holte, Carla Milesi, Laurie Devereaux, Chrys Bertolotto, Maureen Meehan, Jim Mattila, Kit Paulsen, Robert Fuerstenberg, Gino Luchetti, Ruth Schaefer, Katie Sauter, Jessica Kuchan, and Katy Vanderpool.

Finally, we would like to thank those who sponsored our funding: the Lake Washington/Cedar/ Sammamish Watershed Forum and Central Puget Sound Watershed Forum through King Conservation District grants.

Table of Contents

Summary i
Acknowledgements ii
Table of Contents iii
List of Tables iv
List of Figures v
Introduction 1
Methods 2
Volunteer Training 3
Data Collection 4
Quality Assurance/Quality Control 4
Results and Discussion 5
Basin Summary 6
Big Bear Creek Basin 7
Cedar River Basin 10
East Lake Washington Basin 12
Issaquah Creek Basin 14
North Lake Washington Tributaries 16
Sammamish River Tributaries 19
West Lake Sammamish Basin 21
West Lake Washington Basin 21
Vashon Island 22
Central Puget Sound 24
Volunteer Activity 25
Contact with Citizens 26
Time Spent by Volunteers 26
Limitations of Volunteer Data 26
Species Summary 28
Tagged Fish 29
Chinook Salmon 29
Sockeye Salmon 30
Coho Salmon 30
Kokanee 31
Chum 31
Other Species 31
References 32
Appendices 33
Snoqualmie Basin 35
Green/Duwamish Basin 35

List of Tables

Table 1. Volunteer observers for the 2002 Salmon Watcher Program. 2
Table 2. Numbers of sites, streams, and volunteers involved in the 2002 spawning season. 5
Table 3. Stream number, site ID, site location, survey dates, total number of surveys, number of volunteers, and years the sites were watched for each stream surveyed in the Big Bear Creek Basin for the 2002 spawning season. 7
Table 4. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the Big Bear Creek Basin for the 2002 spawning season. 8
Table 5. Stream number, site ID, site location, survey dates, total number of surveys, number of volunteers, and years the sites were watched for each stream surveyed in the Cedar River Basin for the 2002 spawning season. 10
Table 6. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the Cedar River Basin for the 2002 spawning season. 11
Table 7. Stream number, site ID, site location, survey dates, total number of surveys, number of volunteers, and years the sites were watched for each stream surveyed in the East Lake Washington Basin for the 2002 spawning season 12
Table 8. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the East Lake Washington Basin for the 2002 spawning season. 13
Table 9. Stream number, site ID, site location, survey dates, total number of surveys, number of volunteers, and years the sites were watched for each stream surveyed in the Issaquah Creek Basin for the 2002 spawning season. 14
Table 10. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the Issaquah Creek Basin for the 2002 spawning season 15
Table 11. Stream number, site ID, site location, survey dates, total number of surveys, number of volunteers, and years the sites were watched for each stream surveyed in the North Lake Washington Tributaries for the 2002 spawning season. 16
Table 12. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the North Lake Washington Tributaries for the 2002 spawning season. 17
Table 13. Stream number, site ID, site location, survey dates, total number of surveys, number of volunteers, and years the sites were watched for each stream surveyed in the Sammamish River Tributaries for the 2002 spawning season. 19
Table 14. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the Sammamish River Tributaries for the 2002 spawning season. 20
Table 15. Stream number, site ID, site location, survey dates, total number of surveys, number of volunteers, and years the sites were watched for each stream surveyed in the West Lake Sammamish Basin for the 2002 spawning season. 21
Table 16. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the Sammamish River Tributaries for the 2002 spawning season 21
Table 17. Stream number, site ID, site location, survey dates, total number of surveys, number of volunteers, and years the sites were watched for each stream surveyed in the West Lake Washington Basin for the 2002 spawning season 21
Table 18. Stream number, site ID, site location, survey dates, total number of surveys, number of volunteers, and years the sites were watched for each stream surveyed on Vashon Island for the 2002 spawning season. 22
Table 19. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed on Vashon Island for the 2002 spawning season. 23
Table 20. Stream number, site ID, site location, survey dates, total number of surveys, number of volunteers, and years the sites were watched for each stream surveyed in the Central Puget Sound for the 2002 spawning season. 24
Table 21. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in Central Puget Sound for the 2002 spawning season. 24
Table 22. Number of citizen contacts made by all Salmon Watcher volunteers in each of the surveyed basins. 26
Table 23. Number of hours spent by Salmon Watcher volunteers in each of the surveyed basins. 26

List of Figures

Figure 1. Basins surveyed for the 2002 Salmon Watcher Program. 1
Figure 2. Sites in the Lake Washington Basins and Vashon Island surveyed by Salmon Watcher volunteers in 2002. 3
Figure 3. Number of new and returning volunteers surveying in the Lake Washington Watershed for each year of the Salmon Watcher Program. 5
Figure 4. Observations of salmonids in the Big Bear Creek Basin. 9
Figure 5. Observations of salmonids in the Cedar River Basin. 11
Figure 6. Observations of salmonids in the East Lake Washington Basin. 14
Figure 7. Observations of salmonids in the Issaquah Creek Basin. 15
Figure 8. Observations of salmonids in the North Lake Washington Tributaries. 18
Figure 9. Observations of salmonids in the Sammamish River Tributaries. 20
Figure 10. Observations of salmonids on Vashon Island. 22
Figure 11. Number of volunteers (defined as an individual, pair, or group) watching in the Lake Washington Watershed and Vashon Island and number of sites and streams watched from 1997-2002. 25
Figure 12. Percentage of total fish observed in 2002 by volunteers in (a) the Lake Washington Watershed and in (b) Vashon Island. 28
Figure 13. Distribution of chinook salmon in the program area based on Salmon Watcher observations. 30
Figure 14. Distribution of sockeye salmon in the program area based on Salmon Watcher observations. 30
Figure 15. Distribution of coho salmon in the program area based on Salmon Watcher observations. 31
Figure 16. Distribution of kokanee in the program area based on Salmon Watcher observations. 31

Introduction

The Salmon Watcher Program is a volunteer program that originated in 1996 and whose purpose is to record observations of adult fall-spawning salmonids. Through the program, volunteers are recruited and trained to identify and watch for spawning salmon throughout the Lake Washington Watershed and on Vashon Island (Figure 1). Regional agencies who participate in the Salmon Watcher Program along with King County include the Bellevue Stream Team, Snohomish County Surface Water Management, and the cities of Bothell, Issaquah, Kirkland, Redmond, Renton, Seattle, and Woodinville.

The Salmon Watcher Program was initiated to expand on current efforts undertaken by resource agencies to document the distribution of spawning salmon in the Lake Washington Watershed. Basins that comprise the Lake Washington Watershed include Bear Creek, Cedar River, East Lake Washington, West Lake Washington, Issaquah Creek, North Lake Washington, East Lake Sammamish, and West Lake Sammamish. In 2001, Central Puget Sound drainages were observed as part of the Salmon Watcher Program, but in 2002, of the Central Puget Sound area, only Vashon Island was officially part of the program.

Salmon Watcher volunteers annually collect information on the presence of fall-spawning salmonids, including chinook, coho, sockeye, kokanee (resident form of sockeye), and chum salmon, as well as steelhead and resident trout species. Data of this type become more important as salmonids in the region, such as Puget Sound chinook, are listed under the Endangered Species Act.

Because volunteers do this work, this task is accomplished with reduced resources, and the watersheds' residents can become involved and educated at the same time. Further, interactions with agency personnel foster positive relationships between the public and government agencies. With monetary and temporal constraints of agency personnel, much of the data collected in this effort could not be collected otherwise.

In addition to summaries of fish observed during the fall season, this 2002 report contains information about the activity of the volunteers. It should be noted that this report summarizes data collected only by Salmon Watcher volunteers, and it is therefore in no way intended to be an exhaustive report of fish distribution in the Lake Washington Watershed or Central Puget Sound. Other fish surveys are conducted annually by county, state, city, and federal agencies and non-profit organizations. For example, surveys have been conducted by volunteers or County staff to look specifically for kokanee and chinook; the results of these surveys are reported separately and are not included here.

Figure 1. Basins surveyed for the 2002 Salmon Watcher Program

(http://dnr.metrokc.gov/wlr/waterres/salmon/Maps/2002/0306SurveyedBasins.pdf).
This link will open in your browser. Return to this document by clicking on Acrobat Reader again.

Methods

Volunteers[1] were recruited during the summer and early fall of 2002 to observe fish in streams throughout the Lake Washington Watershed[2] and streams on Vashon Island. The 151 volunteers (151 individuals or pairs, totaling 176 people plus 2 classrooms) who surveyed in the Lake Washington Watershed and Vashon, plus 21 people who observed outside the project area, are listed in Table 1.

Table 1. Volunteer observers for the 2002 Salmon Watcher Program.

Ann Aagaard	Bill Conner	Lois Hudson
Mark & Sherry Abbott	Deb Crawford	Ruth Ihlenfeldt
Susan Adamson	Brian Cummins	Marc Imlay
Staci Adman	Nancy Daar	Al Jackson
Leonardo Amorelli	James & Edna Dam	Barbara Johns
Dennis Anderson	Sarah Dammrose	Dennis Johnson
Suzanne Anderson	Carolyn Davids	Barbara Jurgens
Jill & Murray Andrews	Carol Davis	Monika Kaetz
Chad Armour	Noah Davis	Pam Kelly
Russ Atkins	Stacey DeAmicis	Kate Klein
Frank Backus	Alyse & Dennis DeKraker	Donna Klemka
Larry Ball	Paula DeLucia	Cheryl Klinker
Jeannette Banobi	Alix Despard	Janusz Komorowski
Ed Barnes	Barbara Dickson	Sharon Kunz
Cathleen Barry	Chuck Dolan	Yvonne & Joel Kuperberg
Jim & JoAnn Beaumont	V. & Edward Dougherty	Ann Kurtz
Jean & Pete Belits	Gary & Bob Emerson	Wayne Lamm
Bryant Bickmore	Mike Erickson	Dierdre Larson & Meg Mathis
Kai Billmaier	Zack Fabish	Michael Laurie
Gene Bisbee	Sara & Richard Farmer	June Lauritzen
Sara Bogard	Mary Ellen Flanagan	Lynne Lew
Liz Bohlin	Sybille Fleischmann	Ginny Lodwig
Cathy Bohlke	Carla & Dinei Florencio	Steve Long
Mamie & Chuck Bolender	Ana Foukimoana	Odin Lonning & Ann Stateler
Sherry Bottoms & Liz Lewis	William "David" Fry	Josh Luehmann
Lee Bowen	Michel Gallegos	Barbara Lynum
Margie Bradley	Janet Germeraad	Ron Marshall
Brian Brenno	Linda Gonzalez	Mark Martino & Colleen Cullen
Janet Broadus	John & Sally Gummeson	Mike Mason
Robin Buerki	George Hadley	Jim McRoberts
Carolyn Burkhardt	Jaecob Hageman	Louis & Adrienne Mendoza
Tracy Bury	Harbor School	Susan Meyer
Gene Buzzelli	Jim Hearn	Alan Meyers
Earl Caditz	Heidi Hettich	Ray Mielbrecht
Amy Carey	Adam Hirsch	David Miller
Janeene Chilcoat	Kathy Hollis	Yoshihiro Monzaki
Rebecca Clark	Lon Hoover	Stacey Mullins-Jensen
Danielle Clarneaux	Tiffany Hoyopatubbi	JoAnn Napier

[1] "Volunteers" are defined as individuals, pairs, or groups who surveyed at a given location.

[2] In this document, the Lake Washington Watershed means all waters draining through the Ballard Locks, and the subbasins of the Lake Washington Watershed are referred to as basins (e.g., Issaquah Creek Basin).

Table 1. Continued. Volunteer observers for the 2002 Salmon Watcher Program.

Dana & Brittney Nelson	Dick & Mary Schaetzel	Stephanie Timm
Jane Neubauer	Bonnie Schein	Kevin Tobin
Yoshiko Otonari	Ed Schein	Sue Trevathan
Barbara Owens	Carrie & Drew Schwitters	Alice Turner
Deloa Parrish	Christopher Seiber	Ann J. Van Der Geld
Joyce Paul	Lisa Sheets	Whitney VanLoos
Carolyn Peterson	Kathryn Sheldon	Reed Vawter
Larry Poore	Patty Shelton	Art & Elsa Vetter
Emily Pruiksma	Diane Slota	Anna Wahlman
Jo Prussia	Janis & Nicholas Smith	Tracie Walters
Kelly Rau	Julie Smith	Craig & Eva Weaver
Krista Rave-Perkins	Rebecca & Adam Smith	Doug Weber
David Reitz	Stephanie Smith	Beth Wieman
Miyoko Rokumoto & Harry Blevins	Warren Smith	Emily & Matt Williams
JR Rothschild	Susan & Jim Sproull	J.V. Wilson
Michael Russell	Kirk Stauffer	Maggie & Brian Windus
Kathleen Ryan	Dave Taylor	Fritz Wollett
Steve Saepoff	Matthew Taylor	Woodridge Elementary School
Caroline Schaefer	K.Terry Thorsos	Connie Wurm

Volunteer Training

Agency staff held a total of nine classroom training sessions in 2002. Field training sessions were conducted for trained volunteers at Cottage Lake Creek, Issaquah Creek, and the Sammamish River. A field training session was also held on Vashon Island at Judd Creek. Additionally, Snohomish County and Friends of the Hylebos Wetlands held separate training sessions for their respective Salmon Watcher programs, which are off-shoots of the Lake Washington Watershed program reported herein.

All volunteers were taught to identify adult spawning salmon species with a slide presentation and lecture. The slide show was also placed on King County's web site so volunteers could review it at their convenience. During the training sessions, volunteers were asked to sign up for one or more sites to survey. They were given salmon identification materials, including color adult species identification cards and spawner timing charts. Volunteers were taught how to fill out and return data forms. Volunteers were also given a laminated card with contact information for an environmental hotline as well as numbers to call for various situations that might arise in the field, including drainage issues, fish kills, and suspicion of toxic pollutants.

Survey locations were prioritized by staff from each cooperating jurisdiction based on the need for information; however, sites were surveyed based on volunteer availability. Volunteers were assigned to stream locations near their homes or customary walking places whenever possible. Not all sites watched were prioritized by agency staff: some sites were watched because of the close proximity to a volunteer's home. Volunteers were instructed to stay on public property (bridges, parks, etc.) unless they gained permission from the landowners to enter private property or the survey location was on their own property. Figure 2 shows all the sites watched during the 2002 fall spawning season.

Figure 2. Sites in the Lake Washington Basins and Vashon Island surveyed by Salmon Watcher volunteers in 2002
(http://dnr.metrokc.gov/wlr/waterres/salmon/Maps/2002/0306SurveyedSites.pdf).
This link will open in your browser. Return to this document by clicking on Acrobat Reader again.

Data Collection

Surveys were conducted between August 22, 2002, and February 17, 2003, though most surveys began in September and were concluded in December 2002. Volunteers were asked to watch at their survey sites for at least 15 minutes, twice per week, and record any adult salmonids they observed. Actual survey frequency and duration varied greatly among volunteers: the average survey frequency was biweekly but ranged from daily to monthly.

If a volunteer surveyed the same site more than one time on the same day, the highest fish count was used; however, often more than one volunteer surveyed the same site on a single day and both counts were used. Unidentified fish were counted and described when possible. Volunteers counted all live and dead adult salmonids they observed. Volunteers were asked to report only once those dead fish observed on more than one occasion, and to note subsequent observations of the same fish in their comments.

Volunteers were asked if they could tell whether the fish they saw had an adipose fin, and they were asked if they noticed anything at their site that needed to be reported and whether they reported it. Volunteers were asked to note how many citizens they came into contact with during their streamside duties. All data were recorded onto field data forms (Appendix B), which were mailed to Salmon Watcher staff on a monthly basis.

Beginning in 2002, in addition to the data sheets, volunteers were asked to fill out a “First Fish ID” form. This form had several multiple-choice questions about various key characteristics for identifying fish. Volunteers were asked to fill one of these forms out the first time they saw a new species and to turn the forms in with their data.

Quality Assurance/Quality Control

Several means were used to assure that the data collected from volunteers were as accurate and consistent as possible during all phases of the program. Volunteers were provided with training by fish experts: data included in this report were collected either by returning volunteers or new volunteers who attended one of the training sessions for the 2002 season (most but not all returning volunteers also attended a training session in 2002 as a refresher). Volunteers were provided laminated fish identification cards and a packet of training materials with fish identification information in it. Duplicate as well as additional fish identification materials were placed on the Internet. Contact persons were made available to volunteers to answer questions and verify species identification when necessary; volunteers were encouraged to call upon these individuals if they were unsure of species identification.

Staff of the cooperating jurisdictions processed the data sheets and screened them for anything requiring immediate attention, such as an unusual fish sighting or potential water quality problems. If an unusual fish sighting was noticed on a data form, agency staff contacted the volunteer to further inquire about what characteristics they used to identify fish in an effort to ensure as much accuracy as possible. The First Fish ID forms were intended to provide another means by which fish identifications could be checked and verified. Local jurisdiction staff would also follow up on any other reported unusual circumstances as they judged appropriate.

Following data entry, the figures were verified at least once, but typically twice, by different agency staff to ensure accuracy, as well as catch anything that might need addressing. At least one of the data reviewers was familiar with the basins and the typical fish runs for the basins.

Because of the limitations of data usage from a volunteer program such as this (Limitations of Volunteer Data, page 25) and despite quality control measures, the data are intended to be used only to make preliminary evaluations of the distribution of spawning salmonids in the Lake Washington Watershed and Vashon streams. These data cannot be used to infer population structure or size.

Results and Discussion

In 2002, a total of 175 sites on 66 streams were surveyed by 171 volunteers (Table 2).

Table 2. Numbers of sites, streams, and volunteers involved in the 2002 spawning season.

Area	# sites	# streams	# volunteers
Lake Washington Watershed	139	52	132
Vashon Island	17	6	19
Seattle	9	2	13
Other	10	6	7
Total	175	66	171

In 2002, 64 out of 132 volunteers (48.48 percent) in the Lake Washington Watershed were returnees (Figure 3). Of the 64 returnees, 2 pairs of volunteers have surveyed every year of the program. On Vashon Island, 8 out of 19 volunteers (42.11 percent) were returnees.

Figure 3. Number of new and returning volunteers surveying in the Lake Washington Watershed for each year of the Salmon Watcher Program.